AMENDMENTS TO THE ABSTRACT:

Please replace the Abstract with the following:

A method and apparatus is provided for significantly speeding-up program execution in a data processing device. The data processing device is provided with a specialized instruction region storage section comprising content addressable memory (CAM) and random access memory (RAM) that operatively functions as an instruction sequence reuse table which is capable of registering/storing sequences of program instructions and corresponding instruction sequence output data as input/output (I/O) groups for potential future use in place of re-executing identical regions of program code. The data processing device includes at least one instruction stream processor which includes a computing unit for executing instructions and a dependency relationship analysis unit or "reuse window" (RW) that analyzes instruction sequence patterns from regions of instructions stored in a main memory to determine if the patterns can be divided up into smaller partitions that have no interdependencies and, hence, are potential candidates for reuse. Dependency relationships within instruction sequences are identified and patterns of instruction sequence input data and output data are selected to form an I/O group data set for subsequent reuse. Each I/O group data set is assigned an ID and registered in the reuse table. Within the RW a 2D row and column matrix-arranged dependency relations storage memory (M) is used to correlate program instruction sequence input addresses and input values to their associated output addresses and output valves that are produced upon execution and to provide indications of dependency relationships. A memory row computation section (MR) performs particular logical operations on row elements in M and produces I/O group data sets made up of instruction sequence input data patterns and their associated output data patterns. These I/O group data sets are assigned unique IDs based on the result of the logical operations performed within respective columns of M and the I/O group data sets are stored/registered in the reuse table.